

Barnstable Harbor Subwatershed

Barnstable, Cape Cod, Massachusetts

The Barnstable Harbor Subwatershed is located in the towns of Barnstable, Yarmouth, and Sandwich. It has an area of 17,073 acres. Historic Route 6A (Old King's Highway) runs through the center of the area. Residential areas are concentrated along Route 6A and in the eastern part of the subwatershed. The land is flat to the north with a wide salt marsh bordering Cape Cod Bay.

The Barnstable Harbor system possesses deep channels, shallow intertidal flats, and vegetated salt marsh plains. The inlet to the system is to Cape Cod Bay and a 30-45 foot deep channel cuts through intertidal flats. The west harbor areas are relatively shallow and contain peat islands and this portion of the system is dominated by the Great Marsh. A study of flushing rates conducted in 1999 concluded that Barnstable Harbor and its five sub-embayments may be considered rapidly flushing. The study also found that the tidal characteristics in the system inherently cause the Great Marsh to accumulate sediment.

The Cape Cod Commission's Surface Water Management Study (2002) found that in the Barnstable Harbor subwatershed, nitrogen loading does not exceed any of the critical nitrogen loads for most of the five subembayments. The Huckins Creek subsystem, however, was found to be overloaded with nitrogen under both existing and buildout conditions.

A portion of this subwatershed is designated as the Sandy Neck Area of Critical Environmental Concern (ACEC). The ACEC supports recreation, aquaculture, and is one of the state's best examples of biodiversity with approximately 300 species of birds and over 160 species of vascular plants, including 85 species of wildflowers and numerous rare and endangered species. Studies in the ACEC have been conducted by researchers from the Boston College Field Ecology Program under the direction of Eric Strauss. The Sandy Neck Field Station, operated by the Town of Barnstable and the Barnstable School Department, is located on the salt marsh side of the barrier beach. In December 2000 the Woods Hole Group was contracted by the towns in this ACEC to work with the Boston College group to develop a long-term management strategy for the ACEC. This Sandy Neck Management Plan has been released in draft form. One component of the plan will address guidelines for vehicle use on Sandy Neck, which contains piping plover breeding habitat.

This subwatershed has some large tracts of protected open space. More than half of the northern area is protected open space, including almost all of the salt marsh. The Yarmouth Conservation Trust protects 74 acres; this includes ownership of 34 acres of salt marsh off Church Street and a conservation restriction on 33 acres of abutting upland, as well as five other small properties. Two large tracts of privately owned open space extend south from Route 6A to the Mid Cape Highway—57 acres are owned by the Historical Society of Old Yarmouth to the north and 272 acres to the south by the Boy Scouts.

A 1996 field investigation by the Army Corps of Engineers found evidence of degraded tidal wetlands at Bridge Creek. The site is 74 acres and efforts are currently underway to restore the salt marsh.

Approximately one quarter of the Town of Barnstable is municipally sewered. The sewered area of Barnstable extends from the Cape Cod Hospital up Route 132 to Independence Park, with an extension that serves Barnstable Village. The capacity of the treatment plant, located on Bearse's Way, is 2.7 million gallons/day. The town completed a Draft DEP Wastewater Facilities Plan.

Municipal water is supplied to most Barnstable residents through five separate water districts. Town water is available in almost all parts of Yarmouth. The Yarmouth Water Department is installing 10 water services a week, which is a large rate of growth. There are no municipal sewers in the Yarmouth portion of this subwatershed.

Stewards:

- B.A.R.S. (Barnstable Association of Recreational Shellfishing)
- Yarmouth Conservation Trust
- Garretts Pond Watchers

Studies conducted in the watershed:

- Within the Sandy Neck Area of Critical Environmental Concern, through the Sandy Neck Field Ecology Program at Boston College: Piping Plover Study (1982 – present), Diamondback Terrapin Study (1976 – present), American Crow Study (1984 – present), Lyme Disease Study (1985 – present), Honeybee Communication Study (1991 – present), Fowler’s Toad Study (1994 – present), Tree Swallow Study (1995 – present), Interdune Plant Community Study (1992 – present), GIS Mapping Project (1995 – present).
- Cape Cod Wetlands Investigation. June 1996. US Army Corps of Engineers, New England Division. Field investigation of 74-acre tidal wetlands at Bridge Creek.
- Two-Dimensional Hydrodynamic Modeling of Barnstable Harbor and Great Marsh, Barnstable, MA. December 1999. Applied Coastal Research and Engineering, Inc.
- Surface Water Nutrient Management Project, Barnstable Harbor. 2000. Cape Cod Commission.
- Cape Cod Atlas of Tidally Restricted Salt Marshes. 2001. Cape Cod Commission.
- Comprehensive Wastewater Management Plan (Draft).
- USGS Hydrologic Study of the Mid Cape, funded by MA Department of Environmental Protection State Revolving Fund.
- Cape Cod Surface Water Nutrient Management Study: Final Report. June 2002. Cape Cod Commission Water Resources Office. (Nitrogen loading assessment of the Barnstable Harbor system).
- Long Range Natural Resource Management Plan for Sandy Neck Barrier Beach (Draft). 2002. Town of Barnstable.

Who is collecting water quality data and where:

- Town of Barnstable Department of Public Works – three sites in Barnstable Harbor, eight sampling events per year.
 - Physical – total depth, Secchi depth, temperature, oxygen content, salinity, waterbody state (a subjective observation of general conditions), weather, and wind speed and direction.
 - Laboratory analyses – nitrate and nitrite, ammonium, dissolved organic nitrogen, chlorophyll, and orthophosphate
- Garretts Pond Watchers – Sample once a month, May through September, for water temperature, fecal coliform bacteria, *E. coli* bacteria, and phosphate.

Management actions taken:

- Town of Barnstable is participating in Southeastern Massachusetts Aquaculture Center’s scallop restoration project, with the goal of populating Barnstable embayments with bay scallops by establishing brood stock sanctuaries.
- Town of Barnstable planted 200,000 one-year old quahog seeds off Scudder Lane under nets in the summer of 2001.

- Bridge Creek Salt Marsh Restoration Project under the Massachusetts Wetlands Restoration Program. This 40-acre salt marsh restoration project involves the installation of two culverts, scheduled for March 2003. Estimated cost \$883,600.
- The Town of Barnstable is applying for State Revolving Fund (SRF) funds for a Nutrient Management Planning Project. This is a comprehensive project to manage wastewater, stormwater, and fertilizer loadings that are causing nutrient and other water quality related problems to the town's coastal and fresh water bodies. Project area includes the entire Town of Barnstable, Shoestring Bay recharge area of the Popponesset Bay Watershed, Three Bay Subwatershed, Centerville River/East Bay Subwatershed, and Barnstable Harbor Subwatershed.
- Massachusetts Division of Fisheries and Wildlife annually stocks Bridge Creek with brown trout.
- The Town of Yarmouth is currently developing a Waterways Management Plan for fresh and marine waters throughout the town (2002).
- The Town of Barnstable is participating in the DEP Estuaries Project, a comprehensive evaluation of embayments in Southeastern Massachusetts that uses citizen water quality monitoring and water quality modeling of the embayments to evaluate nitrogen removal strategies in the embayment watershed.

Subwatershed facts: (For data sources see the Appendix)

- 21 E sites: 3. Sites are located at: 45 White Cap Lane at Circle (tier 2); Wagner residence, Parker Rd. (tier 2); Usher's Store FMR, 16 Main St. (DEF T1B)
- Solid waste sites: none
- Zone IIs located in this watershed: 2
- Interim Wellhead Protection Areas (IWPAs): none
- Percent of the undeveloped land that is protected (according to 1985/1990 data): 7.1%
- Acres of existing wetlands: 7,392
- Certified vernal pools: 3
- Named freshwater ponds: Mill, Sandy Hill, Spruce, No Bottom, Garretts, Hathaway, Hinckley, Flax (*Barnstable*), Hallets Mill (*Barnstable, Yarmouth*), Long, Dennis, Millers, Muddy, Little Greenough, Greenough, Howes, Perch, Elishas (*Yarmouth*)
- Named rivers or creeks: Scorton, Smith, Eel, Great Island, Boat Cove, Spring, Bridge, Brickyard Through, Maraspin (*Barnstable*), Mill (*Barnstable, Yarmouth*), Short Wharf, Loan Tree, Bass, Clays, White's Brook (*Yarmouth*)
- 1998 Massachusetts 303(d) List of Impaired Waterbodies: Maraspin Creek – pathogens.
- Outstanding Resource Waters: Entire area of Sandy Neck ACEC excluding Freezer Point and the developed marina.
- Shellfish growing areas: Most of the harbor is approved or conditionally approved. Maraspin, Mill, Short Wharf, and Loan Tree Creeks are prohibited.
- This watershed contains Natural Heritage and Endangered Species Program (NHESP) Estimated Habitats of Rare Wildlife.

Priorities:

- Implement BMP on storm drain on Route 6A, just east of Bone Hill Road intersection and north of Flax Pond. Work with Massachusetts Highway Department to correct. (NRCS).
- Expand the Town of Yarmouth's Waterways Management Plan to include water quality monitoring for nutrients.
- Secure funding for Bridge Creek Salt Marsh Restoration Project.

- Implement the recommendations that are made in the forthcoming Sandy Neck Management Plan.
- Preserve open space within the ACEC.
- Garrett, Muddy, Perch, and Little Greenough Ponds need volunteers to participate in the Pond and Lakes Stewardship Project (PALS), measuring water quality and other characteristics of the ponds.
- Implement those salt marsh restoration projects identified in the 2001 *Cape Cod Atlas of Tidally Restricted Salt Marshes* that have been evaluated and prioritized by the town. Sites are: Route 6A restriction of Scorton Creek (Barnstable) (Site SA-13/BA-1), Penn Central Railroad restriction of Bridge Creek (BA-2), Route 6A restriction of Bridge Creek (BA-3), Penn Central Railroad restriction of Brickyard Creek (BA-4), Millway Road restriction of Maraspin Creek (BA-5), Commerce Road restriction of Maraspin Creek (BA-6), Jeep trail restriction of channel off Wells Creek (BA-7), Keveney Lane/Mill Lane restriction of Mill Creek and Hallets Mill Pond (BA-8/YA-1), Mill Lane restriction of Hallets Mill Pond (YA-2), Thatcher Shore Road restriction of Short Wharf Creek (YA-3), and Walking trail restriction of Bass Creek (YA-4).
- Acquire open space. Parcels considered a priority for acquisition for water supply protection and development: Barnstable Tracts 2, 3, 4, 5, 7, 14, 16, 17, 19, 21, 24, 26, 27, 29, 31, 35, 37, 41, 43, 45, 48, 49, 53, 55, and 56 were ranked as having medium or high water supply development potential in the Cape Cod Commission's *Priority Land Acquisition Assessment Project* (April 1999). These tracts are located throughout the town of Barnstable.
- Support Local Comprehensive Plan.

Recreation:

Camping areas: Boy Scout Camp

Golf courses:

- Olde Barnstable Fairgrounds
- Hyannis Golf Club at Iyannough Hills
- Cummaquid Golf Club

Pathways and trails:

- Hathaways Pond Conservation and Recreation Area
- www.capecodcommission.org/pathways/trailguide.htm

Public access:

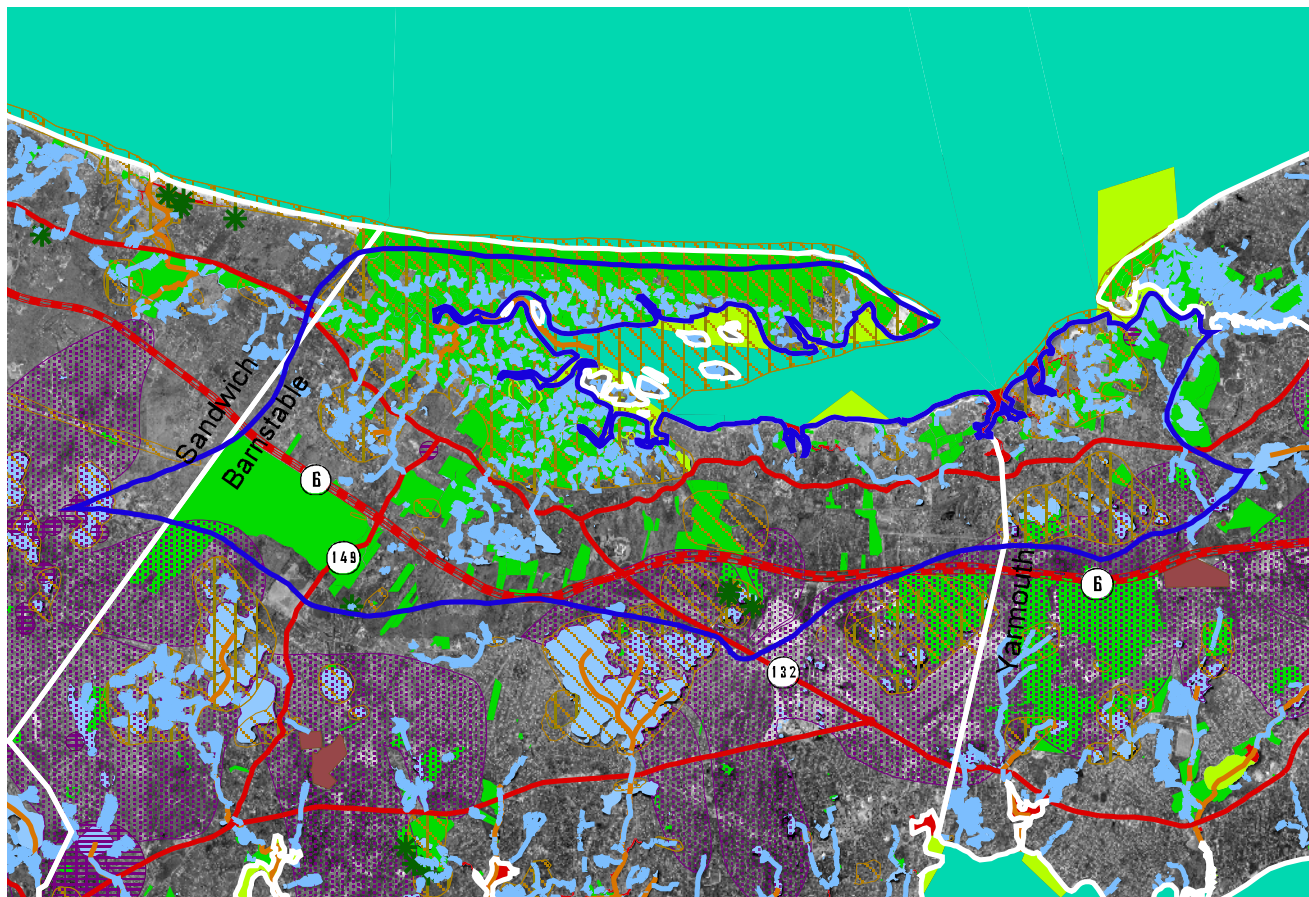
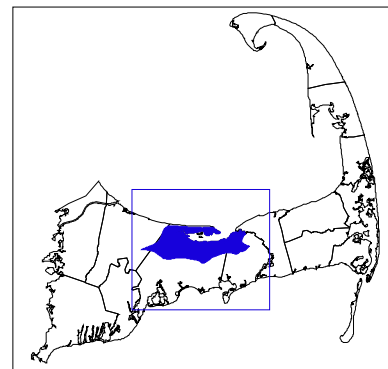
- www.state.ma.us/dfwele/pab/pabSEmap.htm

Public beaches and landings:

- Millway Beach, Sandy Neck Beach, Grays Beach, Dennis Pond Beach (in Yarmouth), Oregon Beach, Hathaway Ponds Beach
- Landing in Cummaquid

Barnstable Harbor

Barnstable, Yarmouth, and Sandwich, MA



Watershed Resources



0 1 2 3 Miles

Natural Heritage and Endangered Species Program Data

- Certified Vernal Pool
- Priority Habitats of Rare Species
- Estimated Habitats of Rare Species

Groundwater Protection Areas

- Interim Wellhead Protection Area
- Zone II
- Solid Waste Facility

Watershed Boundary

Anadromous Fish Run

Shellfish Growing Areas

- APPROVED
- CONDITIONALLY APPROVED
- MANAGEMENT CLOSURE
- PROHIBITED
- RESTRICTED
- Open Space

Streams

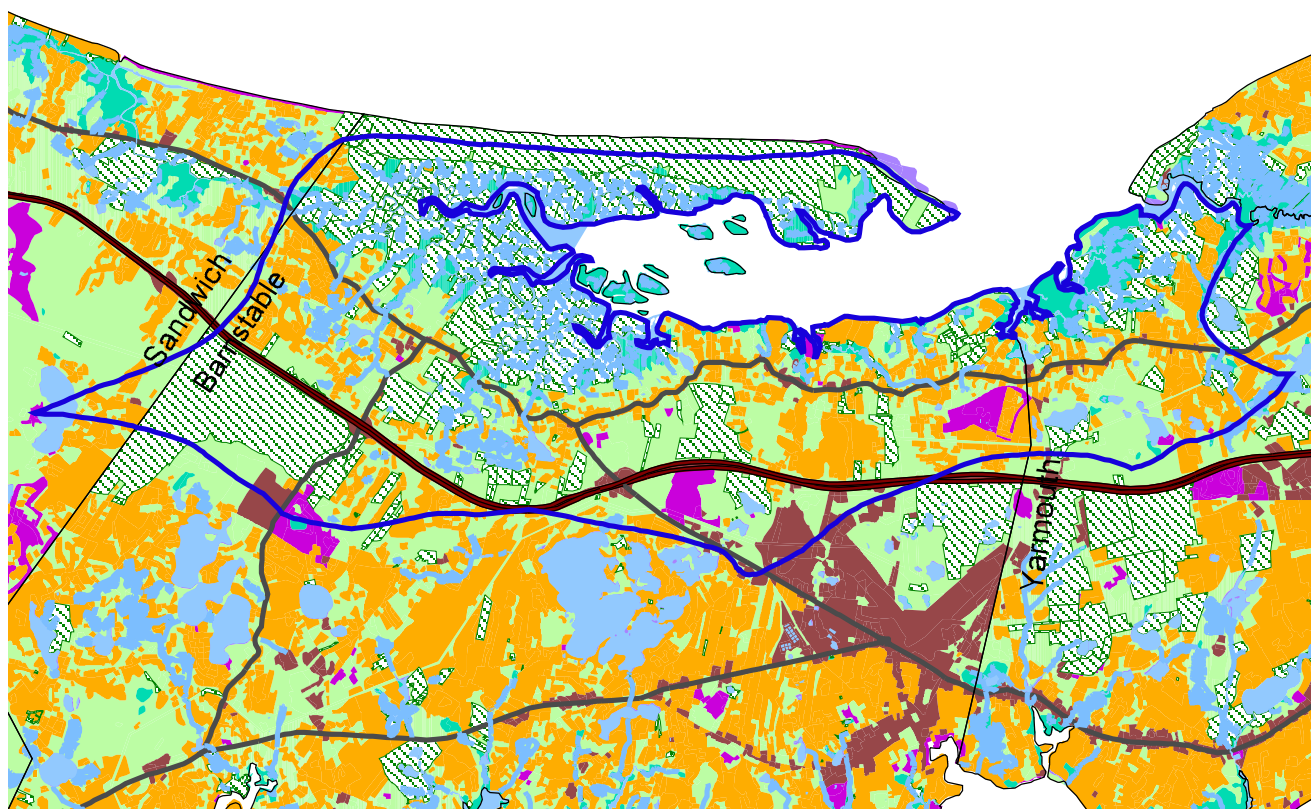
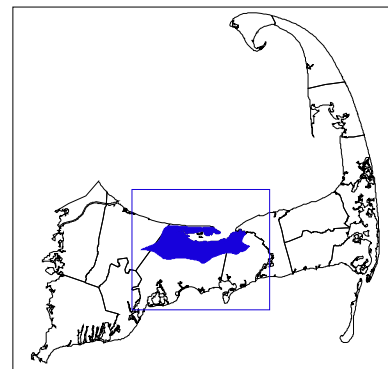
Ponds

Roads



Barnstable Harbor

Barnstable, Yarmouth, and Sandwich, MA



Land Use



0 1 2 3 Miles



Land Use

